



**PhD Students, post-doctoral fellows, young researchers, assistant-professors**, you are welcome to attend the first multidisciplinary NanoX summer school, from **15<sup>th</sup> June to 10<sup>th</sup> July 2020** in Toulouse, France

- Tutorials in research labs
- Hands-on sessions
- Intensive courses
- Master classes with internationally recognized experts in their field



👉 **Pick your week(s)\* before 15 May 2020 !**



OR



**Educational committee :**

- R. Axet (LCC)
  - J. Billy (LCAR)
  - J. Cuny (LCPQ)
  - I. Del Rosal (LPCNO)
  - M. Respaud (AIME)
  - K. Soulantika (LPCNO)
  - B. Urbaszek (LPCNO)
- Chairs:**
- X. Marie (LPCNO)
  - R. Poteau (LPCNO)

**Key informations**

- 16 attendees per week
- Free of charge – only 100€ of registration fees, including attendance to the lectures and tutorials, coffee breaks, and accommodation costs
- More information and online application : <http://nanoX2020.sciencesconf.org>. Please prepare a CV, a cover letter and an acceptance letter from your supervisor (PhD students or Post-doctoral fellows)

\* attendees will have the possibility to apply to one or several weeks. Confirmation will be sent on the fly.

## Quantum Technologies

15-19 June

This week of the NanoX school will be dedicated to Quantum Technologies and the participants will follow lectures and laboratory classes. In this school Quantum Technologies will be introduced through the main technological platforms such as cold atoms, solid state qubits and nano-photonics. The target is to get a practical understanding of how quantum states of atoms, electrons and photons can be controlled in experiments and the possibilities that they offer for future quantum technology applications.

## Nanocrystals Inside

22-26 June



This week will be dedicated to Si-based CMOS technology. To go beyond Si classical technology, a promising approach consists in integrating Si nanocrystals in thin silica. When a limited number of Si-NCs are electrically addressed, Coulomb blockade at room temperature, charge quantization, and single electron transfer become possible. Using our clean room facilities, each participant will manufacture electronic device with embedded Si nanocrystals, and measure the electronic properties, in the perspective of non-volatile flash memories or silicon-based optoelectronics.

## Computational Modeling

22-26 June

The modeling week of the NanoX summer-school will focus on state-of-the-art quantum chemical methods with the view to demonstrate their applicability to tackle various chemical questions. These include Green-function-based methods, reactivity in the ground and excited states as well as advanced tools for molecular dynamics. Combining theoretical and practical courses, the target will be to assimilate the theoretical basis of these methods and their range of application, going from material for energy storage and molecular switches to catalysis and spectroscopy, to learn how they can be applied to anyone's research project.

## Nanocatalysis

29 June – 3 July

This week will be dedicated to Nanocatalysis with a special focus on practical courses. The courses will cover colloidal as well as supported nanoparticles as catalysts, in batch and continuous flow reactors. The emergent domains of single atom catalysts and magnetically induced catalysis will be also be treated. Finally, catalyst characterization by Transmission Electron Microscopy, and X-Ray techniques will complete the training.

## Chemical sensors

6-10 July



This week will be dedicated to sensor technologies. Each participant will manufacture a chemical sensor. This course, in a chemical room and clean room, gives a complete practical approach of the bottom up approach applied to the chemical synthesis and the integration of semi-conducting metal oxide nanoparticles ( $\text{WO}_3$ ) to build up the sensitive layer. It deals with all the operations that are used to manufacture functional devices, as well the measure of gas sensitivity. The goal is to show how nanometric objects can be chemically produced, and integrated to get low cost sensors.